Gas City Park Pond

Grant County

Initial Evaluation

Date of Survey: July 1, 2009

Biologist: Rod A. Edgell and Craig M. Roberts

Survey Objectives: To obtain data on fish populations and water quality in Gas City Park Pond at the request of the Gas City Parks Department.

Methods: Temperature and oxygen profiles were collected at the deepest point using a Hydrolab Quanta® (IDNR 2007). Fish collection effort consisted of 0.3 h of pulsed D.C. day electrofishing with two dippers along the entire shoreline. Total length of all fish was measured to the nearest 0.1 in. Five scales per half-inch group were collected for age determination and back-calculated lengths-at-age for largemouth bass and bluegill. Length frequency distribution for reporting purposes were grouped in half-inch groups which are defined as X.0 – X.4 and X.5 – X.9. Age-length keys were also constructed to determine mean lengths-at-age.

Summary: On July 1 the water temperature was 76ºF at the surface and a dissolved oxygen concentration of at least 5.0 ppm was present throughout the entire pond, allowing fish access to deeper water habitat.

A total of 64 bluegills, ranging in total length from 2.3 to 6.4 in was collected at Gas City Park Pond. The electrofishing catch rate was 221 fish/h. Bluegills of quality size (6 in or greater) comprised only 3 % of the sample. Based on the age-length key and back-calculated lengths, bluegills reach 6 in between ages 5 and 6. Growth of bluegills is below the Indiana natural lakes average where bluegills reach 6 in by age 4.

Thirty-two largemouth bass were collected, ranging in total length from 2.1 to 14.7 in. The electrofishing catch rate was 110 fish/h. Of the largemouth bass collected 72% were between 11 and 15 in and 9% were above the minimum size limit of 14 in. Based on the age-length key and back-calculated lengths-at-age the majority of largemouth bass reach 12 in by age

5. Growth of largemouth bass is also slightly below the Indiana natural lakes average where bass reach 12 in by age 4.

Two smallmouth bass, 8.3 and 14.6 in, were collected and likely entered the pond when flooded by the Mississinewa River. Other species including gizzard shad and common carp are also present in the pond and most likely entered in the same manner. Although these fish do not directly feed on bass and bluegill, they compete with them for forage, and can negatively impact water clarity. Gizzard shad are rarely caught by anglers and have the potential to overpopulate. Conversely carp are often targeted by anglers, however they too can overpopulate and cause the pond to become murky as they disturb the bottom while feeding.

The largemouth bass and bluegill populations at Gas City Park Pond are typical of a pond this size and are more than adequate for children and families to enjoy. The presence of gizzard shad and carp may be negatively impacting the fish community. However any effort to remove these species would be short-lived until the next flood event. A fence or some similar type of barrier to prevent fish from entering the pond during flooding would be needed before a renovation would be cost-effective. Carp are not overly abundant and easily caught by hook and line, and it may be feasible to remove them simply by angling for them. The most practical way to control gizzard shad is to keep a healthy population of largemouth bass in the pond. Adult largemouth bass prey on gizzard shad and have the potential to keep the population at a reduced level.

Recommendations:

- If deemed necessary city officials should consider the feasibility of using a temporary barrier during flood events to prevent fish from entering the pond from the Mississinewa River. By preventing this interaction a more stable fishery could be formed.

- City officials should promote the catch and release of largemouth bass. This species plays a vital role in the balance of the pond and has the potential to keep gizzard shad at low levels. A fishing license is required to fish the pond and all statewide fishing regulations apply.

- The parks department should promote the harvest of carp by anglers, and use signs or media to discourage the public from stocking fish into the pond. A stocking permit would be required to stock additional species.

Submitted by: Rod A. Edgell, Assistant Biologist

Date: 11/9/09

Approved by: Stuart T. Shipman, Fisheries Supervisor

Date: 2/1/10

LAKE SURVEY REPORT

Type of Survey: [X] Initial Survey [ ] Re-Survey

Lake Name	County	Date of survey (Month, day, year)
Gas City Park Pond	Grant	7/1/2009
Biologist's name		Date of survey (Month, day, year)
Rod Edgell		7/1/2009

LOCATION		
Quadrangle Name	Range	Section
Gas City	8 E	4, 33
Township Name	Nearest Town	
Gas City	Gas City	

ACCESSIBILITY					
State owned public access site			Privately owned public access site		Other access site
None			None		City Park
Surface acres	Maximum depth	Average depth	Acre feet	Water level	Extreme fluctuations
3	10.5				
Location of benchmark					

INLETS		
Name	Location	Origin

OUTLETS	
Name	Location
Water level control	

POOL	ELEVATION (Feet MSL)	ACRES
TOP OF DAM		
TOP OF FLOOD CONTROL POOL		
TOP OF CONSERVATION POOL		
TOP OF MINIMUM POOL		
STREAMBED		

Bottom type

- [ ] Bolder
- [ ] Gravel
- [ ] Sand
- [X] Muck
- [X] Clay
- [ ] Marl

Watershed use

City park and residential.

Development of shoreline

None

Previous surveys and investigations

None

SAMPLING EFFORT					
ELECTROFISHING	Day hours 0.29		Night Hours		Total Hours 0.29
TRAP NETS	Number of Traps		Number of Lifts		Total Lifts 0
GILL NETS	Number of Nets		Number of Lifts		Total Lifts 0
ROTENONE	Gallons	ppm	Acre-feet Treated	SHORELINE SEINING	Number of 100 ft Seine Hauls

PHYSICAL AND CHEMICAL CHARACTERISTICS						
Color	Turbidity (Secchi Disk)				Air Temperature	74 F
Light Brown	2	Feet	0	Inches	Water temperature	76.7 F
Water Chemistri GPS Coordinates	N				W	

WATER QUALLITY PARAMETERS															
DEPTH (Feet)	Degrees (F)	D.O.	SpC	pH	TDS	D.O.%	Turb.	DEPTH	Degrees (F)	D.O.	SpC	pH	TDS	D.O.%	Turb.
SURFACE	76.7	6.9						52							
2	76.8	6.4						54							
4	76.8	6.3						56							
6	76.7	5.5						58							
8	76.7	5.7						60							
10	76.6	5.1						62							
12								64							
14								66							
16								68							
18								70							
20								72							
22								74							
24								76							
26								78							
28								80							
30								82							
32								84							
34								86							
36								88							
38								90							
40								92							
42								94							
44								96							
46								98							
48								100							
50															

COMMENTS
C=(F-32)*0.5555

SPECIES AND RELATIVE ABUNDANCE OF FISHES COLLECTED BY NUMBER				
			LENGTH RANGE (inches)	
*COMMON NAME OF FISH	NUMBER	PERCENT	minimum	maximum
Bluegill	64	58.2	2.3	6.4
Largemouth bass	32	29.1	2.1	14.7
Gizzard shad	10	9.1	9.3	12.9
Smallmouth bass	2	1.8	8.3	14.6
Common carp	1	0.9	22.1	22.1
Green sunfish	1	0.9	2.7	2.7
Total (Species)	110	100.0		

*Common names of fishes recognized by the American Fisheries Society.

					TN	GN	EF
Lake:	Gas City Park Pond						
Date:	7/1/2009	to	7/1/2009	Total #	0	0	64
Species:	Bluegill			Effort	0	0	0.29
Total number:	64			CPUE	0	0	221
Total weight:	0						
Length range:	2.3	to	6.4				

Group	TL (in)	TN	GN	EF	TOTAL	RSD
Stock	3	0	0	60	60	-
Quality	6	0	0	2	2	3
Preferred	8	0	0	0	0	
Memorable	10	0	0	0	0	
Trophy	12	0	0	0	0	

Length group (in)	TN	GN	EF	Total	Mean weight (lbs)	Length group (in)	TN	GN	EF	Total	Mean weight (lbs)
1.0						17.5					
1.5						18.0					
2.0			1	1		18.5					
2.5			3	3		19.0					
3.0			12	12		19.5					
3.5			20	20		20.0					
4.0			14	14		20.5					
4.5			5	5		21.0					
5.0			3	3		21.5					
5.5			4	4		22.0					
6.0			2	2		22.5					
6.5						23.0					
7.0						23.5					
7.5						24.0					
8.0						24.5					
8.5						25.0					
9.0						25.5					
9.5						26.0					
10.0						26.5					
10.5						27.0					
11.0						27.5					
11.5						28.0					
12.0						28.5					
12.5						29.0					
13.0						29.5					
13.5						30.0					
14.0						30.5					
14.5						31.0					
15.0						31.5					
15.5						32.0					
16.0						32.5					
16.5						33.0					
17.0						33.5					

					TN	GN	EF
Lake:	Gas City Park Pond			Total #	0	0	32
Date:	7/1/2009	to	7/1/2009	Effort	0	0	0.29
Species:	Largemouth Bass			CPUE	0	0	110
Total number:	32						
Total weight:	0						
Length range:	2.1	to	14.7				

Group	TL (in)	TN	GN	EF	TOTAL	RSD
Stock	8	0	0	30	30	-
Quality	12	0	0	18	18	60
Preferred	15	0	0	0	0	
Memorable	20	0	0	0	0	
Trophy	25	0	0	0	0	

Length group (in)	TN	GN	EF	Total	Mean weight (lbs)	Length group (in)	TN	GN	EF	Total	Mean weight (lbs)
1.0						17.5					
1.5						18.0					
2.0			1	1		18.5					
2.5						19.0					
3.0						19.5					
3.5						20.0					
4.0						20.5					
4.5						21.0					
5.0						21.5					
5.5			1	1		22.0					
6.0						22.5					
6.5						23.0					
7.0						23.5					
7.5						24.0					
8.0						24.5					
8.5			2	2		25.0					
9.0						25.5					
9.5			1	1		26.0					
10.0			1	1		26.5					
10.5			3	3		27.0					
11.0			3	3		27.5					
11.5			2	2		28.0					
12.0			1	1		28.5					
12.5			11	11		29.0					
13.0						29.5					
13.5			3	3		30.0					
14.0			1	1		30.5					
14.5			2	2		31.0					
15.0						31.5					
15.5						32.0					
16.0						32.5					
16.5						33.0					
17.0						33.5					

Back-calculated lengths-at-age for bluegill captured at Gas City Park Pond, in July 2009.

		Age					
Year Class	# Aged	1	2	3	4	5	6
2008	0						
	SD						
2007	7	1.5	2.2				
	SD	0.1	0.2				
2006	15	1.5	2.4	3.3			
	SD	0.3	0.3	0.3			
2005	10	1.6	2.9	3.9	4.8		
	SD	0.3	0.4	0.4	0.4		
2004	1	2.2	3.7	4.4	5.5	6.0	
	SD						
2003	1	1.7	2.9	3.6	4.6	5.2	6.1
	SD						
Mean*		1.6	2.5	3.6	4.8		
SD		0.2	0.3	0.4	0.4		

*Does not include age groups with less than three samples.

Age-length key for bluegill captured at Gas City Park Pond, in July 2009.

Length	# in	# (age) in	Age					
Group	sample	subsample	1	2	3	4	5	6
1.0								
1.5								
2.0	1	1(2)		1				
2.5	3	3(2)		3				
3.0	12	3(2), 2(3)		7	5			
3.5	20	5(3)			20			
4.0	14	6(3)			14			
4.5	5	2(3), 3(4)			2	3		
5.0	3	3(4)				3		
5.5	4	4(4)				4		
6.0	2	1(5), 1(6)					1	1
Mean TL				3.0	3.9	5.3	6.3	6.3
SE				0.1	0.1	0.1		

Back-calculated lengths-at-age for largemouth bass captured at Gas City Park Pond, in July 2009.

		Age					
Year Class	# Aged	1	2	3	4	5	6
2008	1	4.1					
	SD						
2007	1	3.1	5.5				
	SD						
2006	4	2.9	6.0	8.8			
	SD	0.8	2.0	0.9			
2005	7	4.1	6.8	8.8	10.3		
	SD	0.8	0.9	1.0	0.7		
2004	8	3.1	5.8	8.1	10.3	12.5	
	SD	0.8	1.2	1.6	1.3	0.7	
2003	2	3.0	6.5	9.0	11.4	12.6	14.0
	SD	0.0	0.2	1.2	0.0	0.3	0.2
Mean*		3.3	6.2	8.6	10.3	12.5	
SD		0.8	1.3	1.2	1.0	0.7	

*Does not include age groups with less than three samples.

Age-length key for largemouth bass captured at Gas City Park Pond, in July 2009.

Length Group	# in sample	# (age) in subsample	Age					
			1	2	3	4	5	6
1.0								
1.5								
2.0	1	1(0)						
2.5								
3.0								
3.5								
4.0								
4.5								
5.0								
5.5	1	1(1)	1					
6.0								
6.5								
7.0								
7.5								
8.0								
8.5	2	1(2), 1(3)		1	1			
9.0								
9.5	1	1(3)			1			
10.0	1	1(3)			1			
10.5	3	2(4)				3		
11.0	3	1(3), 2(4)			1	2		
11.5	2	1(4)				2		
12.0	1	1(4)				1		
12.5	11	1(4), 5(5)				2	9	
13.0								
13.5	3	2(5), 1(6)					2	1
14.0	1							
14.5	2	1(5), 1(6)					1	1
Mean TL			5.8	8.8	10.0	11.6	13.1	14.3
SE					0.5	0.2	0.2	0.5